STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF SEPTEMBER 10, 2004
Prepared on July 14, 2004

ITEM NUMBER: **XX**

SUBJECT: **New NPDES Permit for the Existing South County Regional Wastewater Authority, Gilroy-Morgan Hill Municipal Wastewater Facility, the Cities of Gilroy and Morgan Hill, and Indirect Dischargers of Santa Clara County, Board Order No. R3-2004-0099, NPDES No. CA0049964**

KEY INFORMATION

Discharger:	South County Regional Wastewater Authority
Location:	South Santa Clara County, on Southside Drive, approximately two miles southeast of City of Gilroy
Discharge Type:	Municipal sanitary wastewater
Design:	Secondary treatment (screening, grit removal, aeration, biological nutrient removal, and clarification), tertiary treatment for a portion of secondary effluent (coagulation, filtration, chlorination, and dechlorination)
Disposal:	Percolation ponds
Capacity:	Design capacity is 7.5 million gallons per day (MGD) average dry weather flow, 10.5 MGD peak monthly flow, 18.8 MGD peak daily flow, and 22.5 MGD peak 4-hour flow
Recycling:	Up to 3 MGD of the secondary effluent can be treated to a tertiary level for on-site facility uses and off-site delivery throughout the County. Reclamation of up to 15.0 MGD future capacity regulated under Master Water Reclamation Requirements Order No. 98-052.
Existing Orders:	Waste Discharge Requirements Order No. 99-29, Master Water Reclamation Requirements Order No. 98-052

SUMMARY

The Cities of Gilroy and Morgan Hill (hereafter "Cities") comprise the member agencies responsible for the South County Regional Wastewater Authority ("SCRWA"). SCRWA (hereafter "Discharger") owns and operates a wastewater collection, treatment, disposal, and water recycling/reclamation facility (hereafter "Facility"). The wastewater treatment portion of the Facility is currently regulated by Waste Discharge Requirements Order No. 99-29, adopted by the Regional Water Quality Control Board on May 21, 1999. The wastewater reclamation portion of the Facility is regulated by Master Water Reclamation Requirements Order No. 98-052 adopted by the Board on May 29, 1998.

Existing land disposal operational and safety constraints in conjunction with projected increases in wastewater flows as a result of community development require additional disposal alternatives to supplement existing land disposal capacity at the facility. During wet months, high groundwater beneath the designated land disposal areas makes percolation difficult or impossible in some disposal

ponds. The Discharger intends to reduce land discharges by increasing water reclamation during the spring and summer. This will effectively increase effluent storage capacity within the disposal ponds prior to the wet season. However, additional disposal capacity may still be required during extreme wet seasons to facilitate the proper maintenance and safe operation of the existing percolation ponds. Therefore, the Discharger is requesting to discharge up to 9.0 MGD of tertiary treated effluent directly to the Pajaro River during the months of November through April on an as-needed basis. Necessity for the requested surface water discharge is based on the anticipated need to limit land disposal discharges during extreme wet seasons as early as 2007.

The proposed surface water discharge is a contentious issue due to Pajaro River watershed stakeholder concerns regarding environmental, public health, and downstream flooding issues. A similar permit proposal brought before the Regional Board in May 1998 caused significant public and municipal opposition. At the time the permit was first proposed, various county agencies, other Pajaro River watershed stakeholders, and the Discharger were unable to resolve outstanding issues. The Regional Board did not adopt the proposed permit in May 1998. Several Board members stated that they needed additional information before making a decision on the proposed permit in light of stakeholder concerns. Since 1998 the Discharger has conducted additional studies to address stakeholder concerns and has proposed controls to mitigate them. The Discharger will limit wet season discharges to prescribed windows of acceptable timing in accordance with river flows, temperature, water quality, and permit limitations. The permit limits wet season discharges accordingly.

When the Regional Board did not adopt the proposed permit at the May 1998 hearing, the Discharger elected to initiate litigation to require issuance of the draft permit. That lawsuit is now pending in the Court of Appeal. Adoption of a permit acceptable to the Regional Board and the Discharger is expected to resolve the litigation.

DISCUSSION

Facility Description

Location

The Facility is located in south Santa Clara County, approximately two miles southeast of the City of Gilroy and adjacent to Llagas Creek as shown on Attachment "A" of the proposed Order. The Facility is composed of a municipal wastewater treatment plant and associated water reclamation treatment plant serving the Cities of Gilroy and Morgan Hill, and limited areas in unincorporated Santa Clara County near San Martin. The water reclamation facility serves additional areas within Santa Clara County.

Design and Treatment Capacity

The wastewater treatment plant currently treats an average dry weather flow (ADWF) of approximately 6.0 million gallons per day (MGD) using an advanced secondary treatment process. The treatment facility, brought on-line in 1995, consists of influent screening, aerated grit removal, nitrification, denitrification, oxidation using an oxidation ditch, and secondary clarification. The current secondary treatment plant is designed to treat up to 7.5 (MGD) average dry weather flow (ADWF), 10.5 MGD peak monthly flow, 18.8 MGD peak daily flow, and 22.5 MGD peak 4-hour flow. Interim upgrade improvements have recently been completed and operational controls are being fine tuned to effectively increase the secondary treatment capacity ADWF to 8.5 MGD. The Discharger has also designed a Phase II facility upgrade that will double the plant's current capacity to 15 MGD to meet anticipated buildout flows of the Cities in 2030.

Wastewater Disposal

The Facility currently disposes of secondary treated wastewater by land disposal via 38 percolation ponds over an approximately 394-acre area around the Facility.

Water Reclamation

Up to 3.0 MGD of the secondary treated wastewater can currently be diverted to tertiary treatment for reclamation uses and the Facility currently has a reclaimed water delivery capacity of approximately 3 MGD (with one filter out of service). The tertiary treatment process consists of coagulation, filtration, chlorination, and dechlorination. Tertiary effluent is used onsite for landscape irrigation, to supply the Facility fire

protection system, and as a non-potable water supply for plant maintenance. The Facility delivered approximately 185 million gallons of reclaimed water to off-site customers during 2003 (3.4% increase from 2002). Although historical reclaimed water flows from the facility are only 1 MGD, the discharger has joined with the Santa Clara Valley Water District (District) in an ambitious recycled water program and expansion of the reclamation facility to a capacity of 9 MGD (with one filter out of service) is expected by 2006. A booster pump station and 1.5 million gallon storage reservoir were added to the reclamation system in 2002 improving the manageability of the recycled water system and customer access to the water. In addition, the District owns and operates an eight-mile, twelve-inch recycled water distribution pipeline capable of supplying 1.5 MGD to local farmers.

In 1993, the Discharger purchased 383 acres of land adjacent to the west and south of the Facility. This land provides a visual and physical buffer between the community and the Facility. The Discharger currently leases this land to an independent farmer and provides reclaimed water for irrigation purposes on an as-needed seasonal basis.

Treatment Performance

Review of secondary and tertiary effluent data indicate the Facility achieves a consistently high level of treatment. A more detailed review of treatment performance data is presented in the findings of the proposed Order and is not repeated here.

Site Description

Groundwater

The Facility overlies the Llagas groundwater subbasin. A general cross section of the hydrogeologic conditions under the site shows a shallow aquifer extending down to approximately 100 feet in depth below the treatment plant. Below this are several deeper aquifers that are overlain by confining clay layers. The depth to groundwater in the upper aquifer varies seasonally with rainfall and agricultural pumping. Historically, groundwater levels in the area around the treatment plant have been high. Generally, the groundwater levels vary between a few feet below grade in the winter and 25 feet during dry months. Farmers have installed underdrain pipes and drainage ditches to improve the land for farming, and some wells near the plant periodically flow in an artesian condition. Both the rate of effluent percolation and the degree of treatment exhibited by the disposal system are affected by high groundwater. The Discharger monitors the water levels in a number of piezometer and monitoring wells distributed over the site. Well locations are located as shown in Attachment C of the proposed Order. The wells are typically 20 to 40 feet deep, and are intended to tap the upper, perched aquifer under the site rather than the deeper, possibly artesian, aquifers. In general, shallow groundwater flow appears to be in a east/southeast direction at a gradient of approximately 0.003 feet of elevation per foot of distance.

The shallow upper aquifer is recharged from creeks, rainfall, agricultural return water, upward leakage of the confined aquifer and percolation of secondary wastewater. The main water-producing zone is encountered at depths starting at 150 to 172 feet below ground surface and is used extensively for municipal water supply by the city of Gilroy. Recharge to the deeper aquifers is mainly from subsurface flows, although some recharge may occur due to the downward flow of surface water and groundwater through leaks in the clay layer that separates the aquifers.

Shallow groundwater in the vicinity of the Facility is, and has historically been, of poor quality particularly with respect to salts and nutrients. Minimum, maximum and average quarterly groundwater data (January 2003 – March 2004) are presented in the findings of the proposed Order. TDS, sodium and chloride concentrations measured in Facility groundwater monitoring wells typically exceed median groundwater objectives for the Llagas sub-area of the Pajaro River sub-basin as specified in the Basin Plan.

Fecal coliform concentrations in groundwater analyzed prior to issuance of the existing permit were generally low, with an annual average less than 28 MPN per 100 ml in all upgradient and downgradient monitoring wells. Since upgradient concentrations were similar to downgradient concentrations it can be assumed that there is little impact of the Facility on groundwater fecal coliform concentrations. The existing and proposed permits do not require fecal coliform testing for groundwater. All proximal monitoring

well BOD and COD concentrations indicate no measurable impact on the groundwater.

Although secondary effluent land disposal is imposing a significant salt loading on the aquifer the relative impact is uncertain given the lack of historical regional data and the widespread historical agricultural activities in the vicinity of the Facility. Historic Facility data shows marginal increases in monitored water quality parameters for some monitoring wells and marginal decreases in other monitoring wells, but no clear increasing trend has been observed for any monitored water quality parameters.

The closest domestic wells and the closest agricultural supply wells not owned by the Discharger are approximately 1,000 feet from any of the disposal ponds at the Facility.

Surface Water

The Facility is immediately adjacent to Llagas Creek, upstream of the confluence with the Pajaro River. The beneficial uses of the Pajaro River and Llagas Creek are listed in the Order. Water quality data for these surface waters are also outlined in the findings of the Order for selected parameters.

Llagas Creek is, and has historically been, of poor water quality particularly with regard to salts and nutrients. Total dissolved solids (TDS), sodium and chloride concentrations generally increase within Llagas Creek as surface water passes the Facility. Surface water concentrations for these parameters regularly exceed Basin Plan surface water quality objectives. The potential or relative impact of secondary effluent land disposal on surface water is uncertain given complex hydrogeology and additional uncharacterized potential sources along the reach of Llagas Creek adjacent to the Facility. There are multiple discharges to Llagas Creek along the length of the Facility property. These include, but are not limited to, storm water runoff from areas outside of the treatment plant property, runoff from agricultural land, discharges from agricultural tile drains, and Miller's Slough.

Nitrate, ammonia and fecal coliform concentrations are generally high at Llagas Creek Facility surface water monitoring stations upstream of the disposal areas with no observable trends in increased concentration as surface water flows past the Facility. Surface water concentrations for these parameters also regularly exceed Basin Plan surface water quality objectives. The potential or relative impact to surface water is uncertain and upstream impacts are likely attributable to agricultural and storm water runoff and wildlife impacts.

The Pajaro River is located approximately 3 miles south/southwest of the Facility. The Pajaro River is also of relatively moderate to poor water quality with respect to salts and nutrients, but is of better quality than Llagas Creek. Receiving water sampling was conducted for the reasonable potential analysis per the State Implementation Policy and selected data is presented in the proposed Order for parameters exceeding applicable water quality criteria. Since the Discharger has documented that during higher than average rainfall seasons groundwater rises beneath the disposal ponds and reduces the overall plant disposal capacity, the Discharger requests to dispose of up to 9.0 MGD of tertiary treated municipal wastewater to the Pajaro River during wet weather months of November through April. That is typically when groundwater is too high for optimum land disposal.

Salt Loading

Impacts to the groundwater basin from salts were identified as a potential significant unavoidable impact in the 1990 Environmental Impact Report for the Facility. An "Effluent Total Dissolved Solids Investigation" was performed in 1995 to evaluate options for salt reduction. Current levels of TDS, sodium and chloride in the municipal effluent are primarily attributable to water supply and the domestic use of residential water softeners. Commercial and industrial facilities with high flow and/or high TDS, sodium and chloride concentration historically contributed significant salt loading to the Facility. The Gilroy Foods Process Wastewater Facility once contributed approximately fifteen percent of the TDS load at the Facility. Gilroy Foods ceased discharging to the Facility in 1996-1997 and currently disposes of its process water on its own property, but still contributes salts loading to the same aquifer. In addition, Gilroy Canning ceased operations, significantly reducing the TDS loading to the Facility. The Discharger's pretreatment program is

also working to reduce TDS and sodium loading to the Facility.

Significant progress has been made to date in reducing influent salt loading to the Facility and thus salt loading to the basin. However, salt loading to the basin due to the land disposal of secondary effluent remains an ongoing issue with long-term potential impacts. Unfortunately it is impossible to ascertain natural background groundwater quality for salt constituents because the area has been impacted by years of agricultural and waste disposal uses which probably increased salt levels. Although TDS, sodium and chloride loading to the groundwater beneath the site is ongoing, it is unknown whether the discharge is causing significant degradation to the larger Llagas groundwater sub-basin. It is assumed that the Llagas groundwater sub-basin has some assimilative capacity. How much assimilative capacity is unknown and could only be determined through an adequate regional monitoring program. The discharger currently has an extensive on-site groundwater monitoring system in the vicinity of the disposal ponds, but a requirement for the Discharger to implement regional monitoring would be excessive.

To address the ongoing salt loading issue, staff added a provision to the proposed Order requiring the Discharger to implement a salts management program. The intent of this program is to reduce mass loading of salt in treated effluent to a level that will ensure compliance with effluent limitations and avoid negative impacts to beneficial uses of groundwater. The proposed Order requires the Discharger to provide an annual evaluation of salt loading impacts and reduction efforts. This annual evaluation will allow Regional Board staff to evaluate the relative impacts of salt loading to the groundwater aquifer beneath the Facility and Llagas Creek.

In addition, staff added secondary effluent/land disposal salt limitations to the proposed Order. Secondary effluent limitations for salts in this Order are based on evaluation of applicable Secondary MCLs, interpretation of Basin Plan Table 3-3 (Guidelines for Interpretation of Quality of Water for Irrigation), Basin Plan Table 3-4 (Water Quality Objectives for Agricultural Water Use), review of literature, groundwater and effluent data, and the ability to remove these constituents from the effluent. In cases where numerical objectives are presented as a range of values, such as in Basin Plan Table 3-3 and literature data, staff used best professional judgment based on crop data. In all cases, Regional Board staff believes the effluent limitations are protective of MUN and AGR beneficial uses.

Basin Plan salt constituent surface water quality objectives for Llagas Creek are similar to objectives for groundwater, and have similar flexibility. However, the proposed Order does not contain effluent limitations to implement the surface water objective. This is because there is not sufficient evidence to support a finding that effluent disposed to the ponds impacts Llagas Creek.

Potential salt loading to Pajaro River as a result of the proposed surface water discharge appears to be relatively insignificant. Facility effluent TDS, sodium and chloride concentrations are approximately equal to that of the receiving water during the dry season (low river flows). Although effluent salt concentrations will likely be higher than in the receiving water during wet season discharges, higher Pajaro River flows will have a greater assimilative capacity to handle the limited increase in salt loading. Effluent limitations for the proposed Pajaro River discharge were established in the proposed Order based on surface water quality objectives specified in the Basin Plan for the at Chittenden sub-area of the Pajaro River sub-basin (Basin Plan Table 3-7, page III-13). Additional rationale for using these objectives is discussed in the findings of the proposed Order.

Effluent Management Plan & Biological Resource Evaluation For Pajaro River Discharge

The Discharger prepared an Effluent Management Plan (EMP) to evaluate potential flow, temperature, chemical barrier (to fish migration), and erosion and siltation impacts as a result of the proposed wet season (November through April) discharge of tertiary effluent to the Pajaro River (*Effluent Management Plan - South County Regional Wastewater Authority, May 2004 Final Report,* by Montgomery Watson Harza). The EMP describes the data collection, evaluation,

analysis, and modeling conducted to evaluate these potential impacts. In addition, the EMP established Pajaro River low-flow and high-flow discharge triggers to mitigate potential downstream impacts.

The Discharger prepared a Biological Resources Evaluation (BRE) to evaluate potential biological impacts of the proposed discharge (*Biological Resources Evaluation - South County Regional Wastewater Authority, May 2004 Final Report*, by Montgomery Watson Harza). The BRE evaluated flow, temperature and water quality impacts to sensitive status species that may be present within the Pajaro River corridor utilizing average wet season Pajaro River flows, proposed low and high-flow Pajaro River discharge triggers established in the EMP, maximum proposed discharge flow of 9 MGD, and available water quality data. The BRE findings indicate that no potential impacts to sensitive aquatic, amphibian, avian or plant species are anticipated as a result of the proposed discharge. Additional evaluation of potential temperature and chemical barrier effects was conducted for the species of primary concern, Federally listed steelhead trout (*Oncorhynchus mykiss*), known to exist in the Pajaro River watershed. The following discussion outlines key methods, results and staff review of the two reports.

Projected Flow and Discharge Modeling

Projected future wastewater flows, storage, reclamation, and disposal capacities were evaluated under extreme wet season conditions (100-year return frequency wet season [November to March] rainfall of 34.7 inches) and normal wet season conditions (median wet season rainfall over the last 45 years – 15.3 inches) to determine the potential need for a wet season discharge to the Pajaro River. The facility is currently operating at an average dry weather flow of 6 MGD with a maximum design flow capacity of 7.5 MGD. Recent stress testing and engineering evaluation indicates the Facility can safely handle up to 8.5 MGD. Projected future dry weather flows of approximately 11 MGD are anticipated by the year 2021 and total buildout wastewater treatment flows for the Cities are expected to reach approximately 15 MGD sometime after 2030. Projected rainfall dependent inflow and infiltration flows were added to the dry weather flows for the EMP modeling evaluation.

The need for a seasonal surface water discharge to the Pajaro River is primarily driven by annual percolation pond reconditioning requirements and pond storage capacity concerns regarding safety and facility preservation issues. For the presented analysis a Pajaro River discharge was considered necessary in future years under the following two conditions: 1) the percolation ponds have stored effluent in them after June 1 and thus impede required reconditioning maintenance, and 2) the total stored volume of wastewater in the percolation ponds exceeds the operational storage capacity of the ponds (279 MG) at any time during the year potentially leading to berm failure. Waste discharge requirements specify that the percolation ponds must be disked or plowed annually to break up accumulated solids and keep the soils aerated. These maintenance activities must be conducted during the summer months as they require the ponds to be completely dry for effective use of the equipment. Approximately two to three months of dry conditions are required for each pond to properly conduct this activity. Historical observations by facility staff during wet years indicate high groundwater levels reduce or even eliminate percolation from various ponds during the entire winter season (November through March). Subsequently, wetter than normal conditions typically reduce excess percolation pond storage and reduce drying times for pond reconditioning.

Recycled water delivery also plays a significant role in the operational availability of percolation pond storage capacity prior to the wet season. The facility currently has a recycled water delivery capacity of approximately 3 MGD and the Discharger is working to maximize recycled water delivery. Flows that are diverted to recycled water customers during the summer and not sent to the percolation ponds will effectively increase the amount of storage available prior to the winter season. The EMP modeling analysis conservatively assumes that recycled water deliveries during the summer months (June through October) will be 3 MGD from 2005-2010, 5 MGD from 2010-2020, and 7.5 MGD from 2020-2030.

The proposed Order allows surface water discharges only when necessary due to pond maintenance or capacity limitations. Modeling

results indicate that the controlled discharge of approximately 35 MG per year of treated effluent to the Pajaro River would potentially be required as early as 2007 under extreme wet season conditions to ensure the safe operation and proper maintenance of the percolation ponds. This would result in a hypothetical 4-day discharge of approximately 9 MGD. Modeling projections indicate that a 9 MGD discharge to the Pajaro River would be required for approximately 17 days in 2011 and 49 days in 2021 during extreme wet seasons. However, under normal wet season conditions model results indicate the existing percolation pond system could handle projected flows and it is not anticipated that a discharge to the Pajaro River will be required prior to 2021 except to augment timing of the summer pond reconditioning activities. Even during extreme wet season conditions between 2005 and 2021 the facility is expected to have excess storage capacity in the percolation ponds prior to the wet season as a result of recycled water usuage during the summer. Increased reclamation in the future could reduce the need to discharge for the purposes of summer pond reconditioning scheduling, but will not avoid the need for potential discharges due to storage capacity limitations during extreme wet seasons. Subsequently, discharges of up to 9 MGD of tertiary treated effluent to the Pajaro River are expected to only be necessary during severe wet seasons and will be controlled during the months of November through April to facilitate the proper maintenance and safe operation of the percolation ponds.

Flow Impacts

The primary flow impact of concern to stakeholders was the potential for a wet season discharge to contribute to downstream Pajaro River flooding. Historic river flow data was evaluated to estimate Pajaro River flows and water levels resulting from the proposed discharge. The flow evaluation was conducted utilizing wet season Pajaro River flow data (1992 – 2001; January - April), rating curve data (water level versus flow rate relationship, as of April 2004) developed by USGS from the Chittenden gauging station on the Pajaro River, and the maximum proposed effluent discharge of 9 MGD. The evaluation resulted in the development of wet season discharge trigger levels (based on high and low receiving water flow stages) to ensure the discharge will only occur during periods when it will not contribute to flooding or an effluent flow contribution of greater than 5% within the Pajaro River. The following table outlines the resultant discharge trigger levels and pertinent Pajaro River flow data:

Proposed Pajaro River Flow Trigger Levels for Tertiary Effluent Discharge					
	Pajaro River Stage Depth (ft)[a]	**Pajaro River Flow (MGD)[a]**	**% Effluent Flow in Pajaro River[b]**	**Increase in Water Level Depth (ft)[b]**	**Proposed Trigger Levels & Descriptions**

	<6.9	<180			No discharge allowed[c]
Effluent Discharge Window	6.9	180	5%	0.1	Minimum depth discharge trigger level[c]
	9.7	519	1.7%		Average wet season flow[e]
	18.0	2,779			Warning trigger level[c]
	24.0	6,004	0.15%	0.01	Maximum depth discharge trigger level[c]
	25.0	6,786			DWR "Flood Monitor Stage"[d]
	30.5	12,000			Max wet season flow[e]
	32.0	13,766			DWR "Flood Stage"[f]

Notes:

(a) As measured at the Pajaro River Chittenden gauging station
(b) At the maximum proposed effluent discharge flow rate of 9 MGD
(c) As proposed in the Effluent Management Plan
(d) The "Flood Monitor Stage" is the level at which initial action must be taken by concerned interests. Minor flooding is possible at this stage. This is the level established by DWR, Division of Flood Management.
(e) USGS Pajaro River Chittenden gauging station flow data for 1992-2001 and the months of January through April
(f) The "Flood Stage" is the level at which significant flooding and hazard may occur. This level is established by DWR, Division of Flood Management.

As proposed, the wet season discharge of effluent to the Pajaro River will not be allowed at Pajaro River flows of less than 180 MGD or greater than 6,004 MGD. The low flow trigger level of 180 MGD (Pajaro River) and a high-flow trigger level of 6,004 MGD correspond to Pajaro River flow to effluent flow ratios of approximately 20:1 and 667:1, respectively. The high-flow trigger level was established to ensure the discharge would not contribute to downstream flooding events. The high-flow trigger level corresponds to a Pajaro River stage (depth) of 24 feet at the Chittenden gauging station, which is one foot below the "Flood Monitor Stage" and 8 feet below the "Flood Stage" as established by the Department of Water Resources, Division of Flood Management. In addition a "warning level" of 18 feet within the Pajaro River would allow the discharger and interested parties sufficient time to anticipate potential flooding events and cease discharging. Evaluation of the Pajaro River Chittenden rating curve indicates that a river flow increase of 9 MGD due to the maximum proposed effluent discharge would result in an increase in water level of less than 0.1 feet (1.2 inches) at the proposed Pajaro River low flow trigger level. At the high-flow trigger level a discharge of 9 MGD would result in a Pajaro River level increase of approximately one tenth of an inch. The low-flow trigger was established to ensure a minimum dilution and mixing of tertiary treated effluent with the receiving water, and mitigate potential water quality or habitat impacts as will be discussed in subsequent sections. The controlled discharge of tertiary treated effluent will only be allowed during the months of November through April when the effluent is likely to represent only a small percentage (less than 5%) of river flow.

Temperature Impacts

Significant concerns were raised regarding the potential effects of increased temperature on steelhead within the Pajaro River due to the proposed discharge. Based on comments from California Department of Fish and Game and Santa Clara County Streams for Tomorrow, the following temperature receiving water limitation language was added to the proposed permit:

"At no time shall discharge cause Pajaro River temperature to exceed 68°F in October or November and 57°F in December through April. If the background Pajaro River temperature exceeds 68°F in October or November and 57°F in December through April, then the discharge shall not cause any increase in background temperature."

This limitation is intended to protect all basic steelhead life history stages including adult upstream migration for spawning; adult downstream migration after spawning; spawning; egg incubation and hatching; fry emergence; juvenile rearing; and spring downstream migration of juvenile out-migrants (smolt).

To estimate temperature impacts as a result of the proposed discharge, combined flow temperatures were calculated from wet season effluent and Pajaro River temperature data at different flow conditions. Effluent and receiving water temperature data were collected between November 26, 2002, and April 11, 2003, to analyze representative temperature data for winter months coinciding with the proposed seasonal discharge. Six tidbit temperature data loggers were deployed at various locations within the wastewater treatment plant effluent stream and Pajaro River, including the proposed discharge location within the Pajaro River at Highway 25. The data loggers were programmed to record hourly temperature readings.

Average winter month (January through April) effluent and receiving water (at proposed point of discharge) temperatures of 68°F and 55.4°F, respectively, were calculated from the collected data and used to estimate temperature changes within the receiving water. The EMP/BRE evaluated potential temperature changes within the receiving water for the maximum proposed effluent discharge flow of 9 MGD, average wet season Pajaro River flow, and proposed low-flow and high-flow Parajo River trigger levels established in the EMP. At the average wet season Pajaro River flow of 519 MGD the Pajaro River would be warmed by approximately 0.2 degrees. At the proposed Pajaro River low and high-flow trigger levels of 180 MGD and 6,004 MGD the proposed discharge would cause an estimated increase in receiving water temperature of 0.6°F and 0.01°F, respectively. Estimated temperature impacts are outlined in the following table:

Estimated Temperature Impacts			
	Low-flow Trigger[a]	**Average Pajaro River Flow[c]**	**High-flow Trigger[a]**
Flow (MGD)[b]	180	519	6,004
Effluent Flow Contribution[d]	5%	1.7%	0.1%
Pajaro River Temperature (°F)[e]	55.4	55.4	55.4
Effluent Temperature (°F)[e]	68.1	68.1	68.1
Resultant Pajaro River Temperature (°F)[f]	56	55.6	55.4
Resultant Temperature Increase (°F)[f]	0.6	0.2	0.01

Notes:
- (a) As proposed in the Effluent Management Plan
- (b) As measured at the Pajaro River Chittenden gauging station
- (c) USGS Pajaro River Chittenden gauging station flow data for 1992-2001 and the months of January through April
- (d) At the maximum proposed effluent discharge flow rate of 9 MGD
- (e) Average winter month (January – April) temperature as measured during 2003 field study
- (f) Calculated

The provided evaluation indicates the anticipated change in receiving water temperature due to the proposed effluent discharge is nearly unmeasurable. The tidbit temperature recorders employed in the study have an accuracy of ±0.4°F and a resolution of ±0.3°F. Therefore, any anticipated change in temperature in the Pajaro River caused by the effluent discharge would be only slightly above the level at which the temperature change would be detectable. In addition, the report suggests that a maximum estimated incremental temperature increase of approximately 0.6°F would not adversely affect any of the steelhead life stages. This assumption is partially based on the fact that the Pajaro River no longer supports spawning and serves primarily as a migration corridor only. Although the Pajaro River historically supported steelhead spawning and large runs up until approximately 1963, spawning and juvenile rearing essentially ceased in the 1960's primarily due to the elimination of suitable spawning and juvenile rearing habitat as the result of heavy siltation within the river. Limited spawning was last observed in the Pajaro River in 1973 with less than a dozen of the offspring reportedly surviving the summer.

Although the Pajaro River at the Highway 25 sampling site corresponding to the proposed river discharge point had somewhat cooler winter temperatures as compared to the other Pajaro River sampling sites, temperatures at this location exceeded the proposed 57°F winter (December through April) receiving water limitation by a few

tenths of a degree several times during and January and February of the test period. The highest Pajaro River temperature at the proposed discharge location during January and February was 57.8°F. Maximum Pajaro River temperatures observed during March and April were relatively higher at 63.1°F and 63.6°F, respectively. The worst-case scenario would occur at Pajaro River flows approximating the low-flow trigger of 180 MGD and receiving water temperatures very near or above the proposed temperature limitation of 57°F. Although temperature increases within the receiving water may not be discernable for effluent discharges under these conditions theoretically the discharger would not be able to meet the receiving water limitations without effluent cooling. The discharger evaluated natural and mechanical cooling options as part of the EMP to address this issue. However, as temperature impacts appear to be relatively negligible, no additional cooling is expected to be necessary to meet the proposed temperature receiving water limitations under controlled discharge conditions. In order to minimize the impact on receiving water temperature, discharges would only occur during periods of low ambient air temperature (low receiving water temperature) and relatively high receiving water flow to ensure receiving water temperatures remain below applicable levels downstream of the discharge. Consequently, the potential impact on receiving water temperature is one of the primary factors that will determine the most suitable discharge periods for excess facility flows.

Chemical Barriers

Migrating fish such as steelhead may avoid the water of a river or tributary if they fail to recognize the chemical signature of the water or if the water contains levels of metals or synthetic organic compound that exhibit toxic effects. Tertiary effluent and receiving water data were evaluated to assess potential impacts that may contribute to chemical changes in the receiving water and adversely effect sensitive aquatic species, particularly steelhead. In addition, a long-term monitoring study on potential fish migration impacts from a similar wastewater discharge, Santa Rosa Subregional WWTP, was also reviewed as part of this evaluation.

Effluent and receiving water quality data were collected during three sampling events on March 2002, July 2002 and February 2003 for the reasonable potential analysis as required by the State Implementation Policy. Analytical results for this data show that only eight of the 204 constituents analyzed were detected in the effluent at levels exceeding California Toxics Rule (CTR) water quality criteria or Basin Plan water quality objectives for the Pajaro River. These eight parameters included: chloroform, dibromochloromethane, bromodichloromethane, fluoride, nitrate, dissolved oxygen, and bis(2-ethyhexyl)phthalate. The first three constituents (chloroform, dibromochloromethane, bromodichloromethane) are disinfection byproducts typically present in wastewater effluent as a result of chlorine disinfection processes. The Discharger intends to modify its disinfection process with an ultraviolet (UV) disinfection system to eliminate the formation of these compounds. Fluoride was found to exceed the agricultural reuse beneficial use criteria of 1 mg/L in one sample at a level of 4.6 mg/L. This criterion is related to soil and plant impacts associated with irrigation and these levels are not expected to impact aquatic species or downstream vegetation at the observed concentrations and effluent contribution. Although nitrate concentrations detected in the effluent samples marginally exceeded the Basin Plan groundwater quality objective of 5 mg/L, they were lower than receiving water concentrations for each of the three sampling events and are not typical of the lower effluent concentrations normally achieved for the facility as historically reported in the self-monitoring reports. The facility is designed for and achieves a significant level of nutrient removal that currently meets the nitrate limit within the proposed permit. In addition, the Discharger has recently expanded the anoxic secondary treatment capacity of the facility and is expected to further reduce effluent nitrate concentrations prior to any future surface water discharge. Bis(2-ethylhexyl)phthalate is a plasticizer used in plastic tubing products and PVC resins. It is a common sampling/laboratory contaminant and is not likely to be present in the wastewater or receiving water at the detected levels. Dissolved oxygen (DO) levels in secondary treated effluent are typically below receiving water dissolved oxygen criteria due to any inherent biochemical oxygen demand (BOD) remaining in wastewater after treatment. This does not appear to be an issue for the proposed discharge as the Facility consistently

produces a tertiary effluent with an average monthly BOD of 2 mg/L, which is less than that of the BOD levels detected in Pajaro River samples. The maintenance of acceptable DO conditions within receiving waters is typically addressed through BOD and temperature limits on effluent discharges as is the case with the proposed permit. The five-day BOD and temperature limits within the proposed permit are sufficiently protective to ensure adequate DO levels are maintained within the Pajaro River downstream of the proposed discharge point. Reduced DO conditions are also more typically a problem with effluent dominated receiving waters in which the discharged effluent comprises a substantial portion of the downstream flow and constitutes a relatively high BOD loading. Therefore, the low effluent BOD levels and relatively small effluent contribution (less than 5%) from the proposed discharge is not likely to significantly depress DO levels or cause excursions of any DO criteria within the Pajaro River. The remaining 204 constituents were generally not detected in either the effluent or receiving water samples with only a few being detected at levels well below (several orders of magnitude in most cases) any of the CTR or Basin Plan water quality objective criteria. Furthermore, toxicity testing data indicated that the tertiary effluent exhibited minor levels of acute and chronic toxicity similar to those seen in the receiving water Pajaro River samples.

It should be noted that the science of understanding or describing chemical signatures of water bodies is relatively undeveloped at this time and there are few scientific data on specific chemical parameters that influence fish migration patterns. Therefore, potential steelhead migration impacts were also considered based on information from a ten-year study of the Santa Rosa Subregional WWTP (SRSWWTP) discharge of tertiary treated effluent (treatment similar to SCRWA facility) to the Laguna de Santa Rosa. The Laguna de Santa Rosa is a tributary to the Russian River and is a known steelhead migration corridor. The SRSWWTP permit limits the concentration of wastewater to 5% of the Russian River flow, but concentrations of effluent in Laguna de Santa Rosa are typically much higher, upwards of 70%. As with the proposed SCRWA permit, effluent is discharged only during the winter months. In summary, ten years of study have demonstrated no adverse effect of effluent exposure to either adult or juvenile steelhead as a result of the SRSWWTP discharge and that steelhead migrate through a wide range of effluent concentrations of up to 70%.

The dilution ratio of receiving water to effluent is a key factor in determining the likely impact of a discharge on the receiving water, and in the case of chemical barriers it is the primary measure of control available to ensure minimal impact to surface water ecosystems. It should be noted that available data indicates tertiary treated effluent from the SCRWA facility is of better quality than water in the Pajaro River with respect to a number of water quality parameters. These parameters include but are not limited to: BOD, nitrate, ammonia, sulfate, turbidity, total suspended solids and fecal coliform. Subsequently, the proposed discharge may be construed to provide a water quality benefit to the Pajaro River. Considering the high level of dilution (20:1 at the low-flow trigger level) and relatively high quality of effluent, the proposed controlled wet season discharge to the Pajaro River is not anticipated to cause or contribute to water quality criteria exceedances or other chemical changes that would impact the migration of steelhead or other sensitive species.

Erosion and Siltation

Potential increases in erosion and siltation along the floor and banks of the receiving water as a result of the proposed discharge were also evaluated in the EMP. The normal range of Pajaro River flows and stages with and without a SCRWA discharge were evaluated to determine the relative impacts on erosion and siltation within the Pajaro River. Four potential impacts of concern were evaluated and consist of the following:

- Silt deposition or increased turbidity in the river due to solids carryover in the discharge;
- Bank or streambed erosion at the point of discharge;
- Changes in erosion or siltation patterns downstream of the point of discharge; and
- Sandbar breaching effects at the river mouth.

Each of these concerns are discussed briefly below outlining the primary points of the evaluation as appropriate to convey the overall conclusions of the EMP.

Silt deposition due to solids in the discharge. The proposed SCRWA discharge to the Pajaro River will be filtered and will contain lower suspended solids concentrations than that of the receiving water in the Pajaro River. There is therefore no potential impact on silt deposition due to solids carryover in the effluent.

Erosion at the point of discharge. Erosion at the point of discharge will be minimized by controlling the velocity of the effluent at the point of discharge through proper outfall location and design. The Discharger evaluated and presented two conceptual outfall designs to address these issues. The suitability of either design will depend on the site conditions of the final outfall location. The outfall location and design will be chosen during a detailed design phase after the discharge is approved. If an outfall is installed, photos and bed profiles will be used to document any potential erosion and provide a basis for outfall maintenance and retrofit as required.

Changes in downstream erosion or siltation patterns. The sediment carrying capacity of a river is generally proportional to flow and is only significant if flows are sufficiently high enough. Rates of erosion and sediment transport increase dramatically at high river flows, and the majority of the annual transport in the Pajaro River occurs during relatively short periods of peak flow between 3,000 and 28,000 cfs. According to previous studies, "A discharge of approximately 3,000 cfs (about 1,940 MGD) in the Pajaro River is considered a 2-year event and is capable of actively transporting bed load material and eroding unvegetated banks." A 9 MGD discharge will contribute approximately 14 cfs to the Pajaro River flowrate and constitutes approximately 0.47% of the river flow at 3,000 cfs. Subsequently, the SCRWA discharge would theoretically increase channel degradation by less than 0.5% under this condition. At higher river flowrates, a 9 MGD discharge would contribute a proportionally smaller fraction of the erosion capability. At river flows below 3,000 cfs, the river lacks the capacity to transport coarse sediment or erode banks. Although the portion of SCRWA flow would be higher at lower river flows (below 3,000 cfs), the sediment transport effect would be less significant if not completely negligible. The relative significance of sediment transport potentially caused by the proposed discharge is best described by comparing estimated sediment transport related to the discharge to that of the total sediment transport of the Pajaro River. A total sediment transport of approximately 10 tons per year, equivalent to about 5 cubic yards of erosion or deposition, was estimated for the 9 MGD proposed discharge using a mathematical expression derived from USGS flow and sediment data for the Pajaro River. Based on previous studies cited in the EMP, estimates of Pajaro River Watershed sediment yield range between 500 and 900 tons per square mile per year. A total sediment yield of 840,000 tons per year was estimated for the Pajaro River using the median estimate yield of 700 tons per square mile per year and a Pajaro River watershed area of 1,200 square miles. Based on this estimate the total sediment load contribution from the proposed discharge would be approximately 0.001%.

Sand bar breaching. Sandbar breaching at the mouth of the Pajaro River is a complex issue effecting habitat preservation, fish migration and flood control. A sandbar generally forms at the mouth of the Pajaro River every year primarily as a result of tidal and wave action and the movement of sand. Coarse sediment carried by the river generally has little influence on timing of the formation of the sandbar, but sediment transport may contribute significantly to the overall regional supply of sand, and river flows may contribute to natural sandbar breaching. Sandbars are generally considered to act as barriers to flood flows, so breaching reduces flood risks. However, breaching of a sandbar separating a freshwater lagoon from the ocean changes the habitat by allowing salt water and predators into the river or lagoon. Breaching may also improve passage for migratory fish, including steelhead. Subsequently, the net environmental effect of breaching is sometimes difficult to determine. The proposed discharge will occur in late winter or early spring, well after the normal deliberate breaching of the sandbar by the Santa Cruz County Public Works Department for flood control purposes. The sandbar is normally breached in September of each year in accordance with an established River Management Plan. Even if the river-mouth sandbar reforms after the September breaching, the breach would be expected to re-open naturally before SCRWA needs to discharge. The discharge will cease well below the maximum flood stage and is therefore not anticipated to contribute to any natural breaching or flooding that may be attributable to extreme river flows. Even if breaching occurs

during a period of discharge, the volume of effluent flow would be too low relative to the river flow (5% or less) to correlate with any sandbar related effects at the mouth of the Pajaro River. Therefore, SCRWA has no need to influence decisions regarding possible deliberate breaching to allow passage of floodwater.

Conclusions

The EMP/BRE concludes that a controlled wet season discharge of tertiary effluent to the Pajaro River would not be likely to affect steelhead migration or other sensitive species due to flow, temperature or chemical barriers. In addition, the EMP establishes discharge criteria for the controlled discharge of 9 MGD during the months of November through April that will ensure a negligible impact on downstream erosion, siltation, water levels and associated flooding. The Discharger will limit wet season discharges to prescribed windows of acceptable timing in accordance with river flows, temperature, water quality, permit limitations, and on an as needed basis to facilitate the proper maintenance and safe operation of the percolation ponds. The proposed Order contains discharge prohibitions limiting tertiary effluent discharges to Pajaro River flows of between 180 and 6,004 MGD as proposed in the EMP.

COMPLIANCE HISTORY

SCRWA has maintained an excellent compliance record since the new facility began operation in 1995. With regard to effluent limitations, there have been four violations in plant history since the 1995 upgrade. Two were exceedances of the 10 mg/L daily maximum nitrate (as nitrogen) limit. The first exceedance occurred during the period following plant start-up, and the second occurred during a Facility stress test conducted in 1999. The other two violations were minor exceedances of effluent pH limitations during November and December of 1998. The Facility consistently achieves a high level effluent quality and the discharge has been in compliance with all other effluent limitations. Self-monitoring reports are submitted in a timely and complete fashion and exhibit a high level of technical quality.

There have been several instances of spills within the plant, usually caused by new equipment that did not function as expected. All spills have been immediately addressed upon discovery. In one case, effluent seeped from percolation pond E-7 as a result of a squirrel hole in the pond levee. This discharge reached an agricultural drainage ditch that flows to Llagas Creek. The leak was repaired and actions were taken to prevent future problems from animal burrows.

Several small to medium sized raw sewage spills have been reported yearly since 1994 due to blockages in the collection system as is consistent with aging collection systems. Spill response routinely limits impacts and facilitates timely repair and cleanup. Although both Cities are implementing informal spill prevention programs, the proposed Order requires a formal spill prevention program with specific elements to be reviewed and updated as necessary every five years.

Since completion of the new plant in 1995, there have been two intentional releases of tertiary treated wastewater to Llagas Creek. Before each event, the Discharger presented the Regional Board with its release plans. During both events, Llagas Creek was at high flow, and water quality impacts of the tertiary treated wastewater would have been minimal. The first event occurred during the heavy rains of 1996 to 1997. From January 27 through February 12, 1997, approximately 3 million gallons per day of tertiary treated effluent were released to prevent overflow of the percolation ponds (approximately 48 million gallons of total release). The second release event occurred from February 18 through March 9, 1998, when approximately 58 million gallons of tertiary treated effluent were discharged to Llagas Creek. The 1997-1998 recorded annual rainfall reported by the Discharger was 36 inches, which is between the 50-year (34.9 inches) and the 100-year (37.5 inches) return frequency rainfall season. Both of these release events occurred when high plant flows from heavy seasonal rains and high groundwater filled the percolation ponds and threatened to breach a levee if controlled releases were not undertaken. Since these releases, additional percolation ponds were added to the Facility to add capacity and mitigate storm flow emergencies. As discussed previously additional disposal in the form of the proposed Pajaro River discharge will likely be required to augment the existing land disposal capacity by 2007 to avoid emergency releases during extreme wet seasons.

EVALUATION OF TOXIC POLLUTANTS

The need for specific water quality-based effluent limitations for priority toxic pollutants was determined using the standardized reasonable potential analysis algorithm outlined within Section 1.3 of State Water Resources Control Board (State Board) Resolution No. 2000-015, *Policy for the Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). Analytical data for priority toxic pollutants and additional chemical compounds as required by the SIP from three effluent and three receiving water samples (collected in March 2002, July 2002, and February 2003 by the Discharger) were compared to applicable water quality criteria. Water Quality-Based Effluent Limitations (WQBEL) were established for priority pollutants for which the provided data indicated the proposed discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective. Water quality based effluent limitations for priority pollutants presented in the proposed Order were established for constituents for which effluent or background receiving water concentrations exceeded applicable criteria and thus required the calculation of effluent limitations. Constituents for which effluent concentrations exceeded applicable criteria include: bis(2-ethylhexyl)phthalate, bromodichloromethane, dibromochloromethane, and chloroform. Constituents for which receiving water concentrations exceeded applicable criteria include: lead, thallium, aluminum and manganese. Aluminum and manganese are not priority toxic pollutants, however they were evaluated as part of the RPA analysis as Basin Plan pollutants.

For priority pollutants not detected in either the effluent or background receiving water, but for which the analytical detection limits exceeded the applicable criteria, data was considered insufficient, resulting in no reasonable potential and therefore no effluent limitation calculations. Where data is insufficient, the permit writer must review other information to determine if a WQBEL is required. Other information may include the facility type, the discharge type, solids loading analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water, CWA 303(d) listing for the pollutant, and the presence of endangered or threatened species or critical habitat. In this case, the additional information discussed below indicates that WQBELs are not necessary for the constituents listed in the following table:

Priority Pollutants for Which Analytical Detection Limits Exceeded Water Quality Criteria

CAS #	CTR#	Constituent
107131	18	Acrylonitrile
75354	30	1,1-Dichloroethene
15972608	59	Benzidine
56553	60	Benzo (a) anthracene
50328	61	Benzo (a) pyrene
205992	62	Benzo (b) fluoranthene
207089	64	Benzo (k) fluoranthene
111444	66	Bis(2-chloroethyl)ether
85687	70	Butyl benzyl phthalate
219019	73	Chrysene
53703	74	Dibenz (a,h) anthracene
91941	78	3,3´-Dichlorobenzidine
84662	79	Diethyl phthalate
131113	80	Dimethyl phthalate
84742	81	Di-n-butyl phthalate
121142	82	2,4-Dinitrotoluene
117840	84	Di-n-octyl phthalate
122667	85	1,2-Diphenylhydrazine
118741	88	Hexachlorobenzene
193395	92	Indeno (1,2,3-cd) pyrene
62759	96	N-Nitrosodimethylamine
621647	97	N-Nitrosodi-n-propylamine
309002	102	Aldrin
319846	103	alpha-BHC
57749	107	Chlordane (tech)
50293	108	4,4´-DDT
72559	109	4,4´-DDE
72548	110	4,4´-DDD
319868	111	Dieldrin
7421934	117	Heptachlor
76448	118	Heptachlor Epoxide
12674112	119	PCB-1016

Priority Pollutants for Which Analytical Detection Limits Exceeded Water Quality Criteria		
CAS #	CTR#	Constituent
11104282	120	PCB-1221
11141165	121	PCB-1232
53469219	122	PCB-1242
12672296	123	PCB-1248
11097691	124	PCB-1254
11096825	125	PCB-1260
8001352	126	Toxaphene

These constituents are not normally found in municipal wastewater and there are no known sources of these constituents within the wastewater collection services district. Although a large number of nondomestic commercial and industrial facilities have the potential to discharge various wastes to the community sewer system, the Discharger has a very comprehensive pretreatment program. The Discharger has been implementing a pretreatment program since 1999 as required by the existing Order due to a relatively large number of nondomestic dischargers and in anticipation of a surface water discharge. Of the 390 nondomestic dischargers permitted under the pretreatment program only 10 are classified as significant industrial users, of which 5 are categorical industrial users subject to federal pretreatment standards. The Discharger coordinates with the local agency building plan check and business license offices to review all new business license applications and identify new nondomestic dischargers. Subsequently, all known nondomestic facilities discharging wastewater to the community sewer system are regulated by industrial wastewater pretreatment permits administered and enforced by the Gilroy Chemical Control, Fire Prevention, and Hazardous Materials Department (Certified Unified Program Agency for the Cities). Industrial wastewater pretreatment permits establish enforceable effluent limitations specific to each facility and require regular monitoring and reporting to verify compliance with the permit. As part of the pretreatment program the Discharger also conducts inspections and independent monitoring to verify compliance with pretreatment standards and requirements. In addition, the Discharger conducts annual WWTP influent, effluent and sludge sampling for priority pollutants. The Pajaro River is not 303(d) listed for any of these priority pollutants and there is no known history of these constituents being detected in either the WWTP effluent or Pajaro River. The unforeseen discharge of these constituents is not likely to cause any adverse effects on steelhead habitat or species, downstream domestic users, or water quality in general given low (undetected) effluent concentrations and dilution within the receiving water. The discharge of tertiary treated effluent to the Pajaro River will be limited to the months of November through April between specific river flow triggers to maintain a maximum wastewater flow contribution of 5% (20:1 dilution) and not contribute to flood stage flows. Additional monitoring for these constituents other than that already specified in the SIP and Discharger's pretreatment program were not established for these constituents. Additional data will remain inconclusive and insufficient until the analytical detection limits for these constituents approximates the applicable criteria. Establishing effluent limitations equal to the detection limit would provide no water quality benefit. Since these constituents have not been detected either in plant effluent or in background receiving water, the limits would not result in any changes to the existing effluent quality. At a minimum, sampling and analysis of all priority toxic pollutants is required once during the life of the permit for the evaluation of water quality-based effluent limitations.

ENVIRONMENTAL SUMMARY

The City of Gilroy and the City of Morgan Hill each certified a final Environmental Impact Report (EIR) on September 24, 1990, in accordance with the California Environmental Quality Act (CEQA, Public Resources Code, section 21000, et seq. and the California Code of Regulations).

Adoption of an NPDES permit is exempt from the EIR preparation requirements of CEQA (California Water Code §13389.) The issue of whether a Regional Board must comply with other CEQA requirements is pending before the California Supreme Court. (*City of Burbank v.* SWRCB (2003) 111 Cal.App.4th 245, *cert. granted,* 7 Cal.Rptr.3d 1 (Cal. Nov 19, 2003).) The following discusses the environmental impacts for the portion of the project that the NPDES permit authorizes, as identified in the EIR. The Regional Board does not

concede that CEQA requires these findings. Even if CEQA applies, because the Regional Board has only limited jurisdiction to consider matters regarding water quality impacts from the discharge of waste and nuisance associated with the discharge of waste, the Board considers only those impacts falling within its jurisdiction. The EIR identified fifteen significant environmental impacts that are within the Board's jurisdiction and which may result from the rainy season discharge to Pajaro River. Because the discharges to land that are covered by this permit were authorized under the existing permit and the Board adopted a CEQA resolution regarding the environmental impacts of those discharges, the impacts reviewed here are limited to those associated with the point-source discharge to the Pajaro River. With respect to land discharges, this permit is exempt from CEQA under Guidelines 15301 (14 C.C.R. §15301), for existing facilities with negligible or no expansion of use.

The following discussion of potential EIR noted impacts remains essentially as it was presented in the original 1998 draft order. Most of these impacts have been addressed in greater detail by the Discharger since 1998 as discussed within the *Effluent Management Plan & Biological Resource Evaluation for Pajaro River Discharge* discussion portion of this staff report. Staff responses were updated accordingly with regard to new information provided in the Discharger's EMP and BRE.

Impact A: Increased Pajaro River streamflows could result in significant bank erosion potential, to the extent that dispersive soils are present.

Response: When the Cities certified the EIR they resolved to conduct a survey to locate any significant areas of dispersive soils along the Pajaro River, downstream of the San Benito River confluence. If dispersive soils are found, the Discharger resolved to stabilize the riverbank in those areas with vegetation to prevent erosion.

The EMP indicates changes in downstream erosion will be negligible due to the timing and controlled nature of the proposed discharge. Increased erosion is only anticipated in the immediate vicinity of the discharge point if not adequately mitigated through a sufficient outfall design. Therefore an extensive survey and stabilization program along the entire downstream reach of the Pajaro River would be excessive given the complexity of the watershed.

The Discharger must construct a pipeline and outfall to convey tertiary effluent to the Pajaro River. A limited bank erosion study will occur as part of the pipeline and outfall design. Per the proposed Order stabilization within a specified distance downstream of the discharger point will occur as part of the pipeline and outfall construction. The proposed Order contains a provision requiring the Discharger conduct a bank erosion study within a 1,000 foot reach downstream of the outfall location and develop an outfall monitoring and maintenance plan. The proposed MRP also contains a requirement to conduct outfall monitoring to identify areas of erosion occurring within 1,000 feet of the discharge location.

Impact B: Discharge of wastewater to the Pajaro River could have a significant effect on the domestic users downriver from the discharge point.

Response: The EIR says "Alternative SL could result in potentially significant impacts on the domestic use of the Pajaro River downriver from the discharge point where at least 18 residences obtain their water directly from the river or from wells adjacent to the river." The Cities resolved that these users would be required to find alternative water supplies.

The Department of Health Services (DHS), in a November 18, 1997 letter to the Regional Board, stated that there are no public water systems that are currently using the Pajaro River as a surface water supply for domestic use. Additional correspondence between Regional Board staff and DHS on July 6, 2004 confirmed that there are currently no systems with 15 connections or more using Pajaro River water for domestic use. DHS also indicated they are not aware of smaller systems (15 connections or less) under the jurisdiction of the local county health departments. Followup discussions with Santa Cruz and Monterey County health department staff indicate there are no known or permitted domestic users of Pajaro River water. If there were such systems, under the federal Enhanced Surface Water Treatment Rule, they must treat that water before its use. The treatment would occur whether or not SCRWA discharged to the Pajaro River. Thus SCRWA's discharge does not affect domestic users with respect to necessitating additional treatment.

DHS further stated that there are public water system domestic groundwater wells within 200 feet (but all greater than 50 feet) of the Pajaro River and potentially impacted by the river. Furthermore, the DHS stated in a meeting with SCRWA and Regional Board staff on November 7, 1997, that they had identified three public water systems served by wells within 1000 feet of the Pajaro River (Aromas, Betabelle, and River Oaks). Regional Board staff believes that impacts to those systems are unlikely given the limited discharge and high quality tertiary effluent. Thus, the mitigation measures in the NPDES permit reduce this potential impact to less than significant.

Impact C: Potential degradation to groundwater, Llagas Creek, and Pajaro River water quality on an infrequent, temporary basis from accidental discharges of untreated or partially treated sewage due to plant shutdown or failure, industrial pretreatment failure and chemical spills, or a major seismic event.

Response: When the Cities certified the EIR they resolved to provide emergency storage capacity and emergency standby power for the treatment plant. Influent and effluent monitoring was also required to detect pretreatment failures and chemical spills. The plant would comply with the seismic requirements in current building codes. The draft NPDES permit contains additional protections against accidental discharges of untreated or partially treated sewage. For example, the NPDES permit specifies that the discharger is directly responsible for the pre-treatment program and is required to implement, enforce and fund a pretreatment program. Standard Provisions and Reporting Requirements for NPDES permits (January 1985) require all facilities for transport, collection and treatment of wastewater be adequately protected from inundation by a 100-year storm. General Permit Condition No. 21 of the Standard Provisions requires discharger's to implement safeguards to ensure compliance with the permit, including preventative and contingency plans, alternative power sources, standby generators, retention capacity, operating procedures and other precautions. The permit requires a Spill Prevention Plan. The Cities, when they certified the EIR, acknowledged that while risks can be reduced they cannot be eliminated. The draft NPDES permit provisions further reduce the risk of discharge of untreated or partially treated waste, but does not eliminate them.

It should be noted that the existing land discharge may be contributing to degradation of the Llagas groundwater basin because of high groundwater levels in winter. The wet weather surface water discharge will reduce these potential impacts. Furthermore, the proposed surface water discharge will provide the Discharger more flexibility in managing effluent discharges during extreme wet seasons. The seasonal discharge of tertiary effluent to the Pajaro River is needed to eliminate potential uncontrolled discharges of secondary effluent to Llagas Creek as the result of disposal pond failure or controlled discharges of tertiary effluent to Llagas Creek to avoid potential disposal pond failure.

Impact D: Increased Pajaro River upstream flows could potentially alter migration responses in steelhead trout with resultant effects of fish stranding and increased susceptibility to poaching and disease.

Response: When they certified the EIR, the Cities resolved to time large river discharges to the extent possible, upon the commencement of winter rains and high stream flows to minimize steelhead migratory responses. The Discharger has since developed an EMP. The proposed Order limits discharges to prescribed windows of Pajaro River flows between November and March such that the effluent contribution in the receiving water will not exceed 5%.

The biological response to initiate migration is due to the cumulative effects of environmental cues including stream flow, water temperature, photoperiod, and lunar stage. Anadromous fish are sophisticated species and have adapted to fill unique niches. In the case of steelhead trout, this species is generally more hardy and adaptive than other anadromous species. However, a change in temperature is one of several environmental cues where harm to individual fish results from abrupt changes. Incremental changes allow cold water species to find alternative habitats that satisfy their physiological requirements. Evaluation of potential temperature impacts presented in the EMP and BRE indicate relative temperature increases as a result of the proposed discharge will be almost immeasurable. Nonetheless, the Discharger is

required to limit discharges to periods of low ambient and Pajaro River temperatures to minimize the potential impacts on the biological response of steelhead trout.

Impact E: Wet season discharge of wastewater to the Pajaro River containing copper and ammonia without sufficient dilution could create an avoidance response in steelhead, resulting in potentially significant impact to steelhead populations.

Response: The NPDES permit contains effluent and receiving water limits for ammonia. The treatment facility is designed and operated to achieve acceptable ammonia levels and comparison of effluent and receiving water data indicate Pajaro River ammonia concentrations are generally higher than effluent concentrations. As for copper, monthly effluent sampling has not detected copper above the 0.05-mg/L detection limit in over four years. The on-going pretreatment program will continue to mitigate potential copper loadings to the plant to keep effluent within acceptable levels. In addition, the proposed discharge flow triggers will limit the maximum receiving water to effluent ratio to 20:1 and will provide adequate dilution of effluent.

When they certified the EIR, the Cities resolved to monitor steelhead migration patterns in Pajaro River at the time of discharge. The proposed MRP does not require the Discharge to provide this data to the Regional Board because the conditions of the permit mitigate this potential impact to a less-than-significant level. Avoidance responses are unlikely due to copper or ammonia, and given the timing, limited volumes, and high quality effluent discharge.

Impact F: Elevated temperatures of effluent discharged to the Pajaro River may have significant adverse impacts on Steelhead smolt transformation necessary for ocean life and smolt survival on the way to the ocean from the Pajaro River tributaries, as well as to the vigor and health of spawning adults.

Response: Streamflow and temperature are closely linked factors to the survival conditions of anadromous fish. Temperature is typically most critical for adult spawning, incubation, followed by fry and juvenile rearing life histories. The proposed Order contains temperature restrictions as proposed by the California Department of Fish & Game and Santa Clara County Streams for Tomorrow that are intended to protect all basic steelhead life history stages. The proposed Order requires the Discharger to maintain stream temperatures that support productive steelhead habitat and to limit discharges in such a way as to mitigate any adverse temperature effects.

Impact G: Pajaro River fish could potentially be impacted to the extent that erosion and turbidity is increased between winter storms. Potentially significant impacts could result affecting Sacramento blackfish, Sacramento squawfish, three spined stickleback, and a small steelhead population downstream of the San Benito River confluence.

Response: The proposed maximum flow contribution of 13.5 cfs (9 MGD) is very low compared with the peak wet weather flows seen on an annual basis (hundreds to thousands of cubic feet per second). Therefore, increased erosion and associated turbidity as a result of the proposed discharge is not likely as supported by the Discharger's EMP evaluation. Furthermore, the treatment Facility effluent has a turbidity of 0.55 NTU compared to an average turbidity in the Pajaro River of 58.4 NTU.

Impact H: Daily variations in treatment plant discharges could result in abnormal variation of salinity and temperature and area submerged and exposed, resulting in potentially significant impact to Pajaro River and estuary.

Response: At the time they certified the EIR, the Cities resolved to regulate the discharge so that variations would be limited. They resolved that the facilities would include flow equalization basins and/or sufficient retention ponds to retain wastewater during peak production periods and released at a more steady rate throughout the day.

The plant is designed and constructed to enable steady discharges of tertiary effluent to the Pajaro River. The Discharger does not intend to store and release effluent from holding ponds or storage reservoirs because it would be difficult to mitigate solar heating and meet receiving water temperature limitations.

As previously discussed, potential temperature impacts are expected to be minimal and the Discharger will limit discharges to mitigate adverse effects. Furthermore, effluent quality is consistent and predictable, and available data indicate effluent water quality is generally better than the receiving water for sulfate and TDS. The proposed Order limits the amount of effluent and discharge timing to the Pajaro River. The proposed discharge will increase Pajaro River levels by only one tenth of a foot or less at the prescribed Pajaro River flow triggers.

Impact I: Increased flows in the Pajaro River could result in increased breaches of the sandbar at the mouth of the Pajaro Estuary, which could result in potentially significant impacts to fish habitat as well as the wildlife that eat the fish, including the Double-crested Cormorant.

Response: At the time they certified the EIR, the Cities resolved to study breaching of the sandbar before and after discharges to the Pajaro River. The proposed MRP does not include such a monitoring requirement as the proposed discharge is not likely to increase or adversely effect breaching given the discharge timing and flow contribution as determined by the EMP and required by the proposed Order.

Impact J: The discharge of freshwater into the Pajaro River may cause significant impacts to salt marsh vegetation if there are significant changes in soil salinity.

Response: Data indicates the proposed discharge will not have a significant impact on salt marsh vegetation since its effluent salinity is similar to that of the Pajaro River. Data from the EPA STORET database lists the mean total dissolved solids level at Chittenden as 861 mg/L, with a range of 270 mg/L to 1480 mg/L. The Facility effluent averages 685 mg/L with a range of 638 to 718 mg/L, well within the range of salinity levels experienced at Chittenden.

Impact K: The uptake of trace amounts of heavy metals in the effluent could potentially impact riparian vegetation. The significance of this impact is not known.

Response: At the time they certified the EIR, the Cities resolved to monitor riparian vegetation downstream of the discharge. Comparison of RPA effluent and background receiving water data indicate higher concentrations of nickel, arsenic, mercury, lead, selenium, thallium, and chromium (both tri- and hexavalent) are present in the Pajaro River as compared to the Facility effluent. Copper and zinc levels were similar for both the receiving water and effluent. Moreover, only thallium and lead concentrations (in the receiving water) exceeded applicable human or aquatic water quality criteria resulting in the requirement for effluent limitations. Increased metals loading as a result of the proposed discharge will be negligible given the limited flow and mass contributions of the proposed discharge.

Furthermore, the Discharger's pretreatment program monitors metals in the treatment plant influent and effluent and regulates commercial and industrial discharges to the collection system to mitigate loading of metals and other potentially toxic constituents. Effluent limits for heavy metals are included in the proposed Order if the metals have a reasonable potential to exceed applicable criteria, by reference to Title 22 maximum contaminant levels for inorganics. The proposed Order also conforms with the Basin Plan with regard to restrictions on heavy metals and should be, by definition, adequate to protect downstream habitats and beneficial uses from any significant impact. The proposed Order and MRP contain monitoring requirements for heavy metals subject to effluent limitations.

Impact L: Nickel in the effluent could result in potentially significant toxic impacts to diatoms, invertebrates, and fish (including steelhead embryo and larvae).

Response: Evaluation of the RPA data indicates that nickel concentrations are generally an order of magnitude greater in the Pajaro River than in the effluent. As discussed previously, the Discharger's pretreatment program reduces nickel at the source and monitors nickel in the treatment plant influent and effluent. At the time they certified the EIR, the Cities found that nickel was being removed through the pre-treatment program. They also resolved that nickel in wastewater would be reduced in pretreatment and treatment to levels that would not increase existing nickel levels in the river.

The proposed Order conforms with the Basin Plan with regard to restrictions on nickel and should be, therefore, adequate to protect downstream habitats and beneficial uses from any significant impact.

Impact M: Odor resulting from various unit processes (primary clarifiers, headworks, influent Parshall flumes, oxidation ditch, anaerobic digesters, sludge thickeners at the treatment plant would create potential significant impacts to adjacent sensitive land uses.

Response: At the time they certified the EIR, the Cities resolved to include various odor-reduction facilities and practices that they found would reduce odors to insignificant levels. The Discharger installed odor control scrubbers for plant's odorous facilities when the treatment plant was constructed. The Discharger will abide by the proposed Order conditions regarding nuisance and the generation of odors. The Discharger is also subject to Bay Area Air Quality Management District restrictions listed in its BAAMD permit regarding odors. The NPDES permit prohibits the discharger from causing a condition of nuisance in connection with waste disposal. This prohibition covers unpleasant odors.

PROPOSED ORDER

Changes to Order

The proposed Order remains similar to existing Order No. 99-29 with respect to the existing land discharge prohibitions and effluent limitations with the exception of additional secondary effluent limitations for salt constituents. Other major changes to the proposed Order include the following:

- Authorization of a 9.0 MGD seasonal (November through April) surface water discharge of tertiary effluent to the Pajaro River and associated discharge prohibitions, specifications, receiving water limitations, tertiary effluent limitations and effluent toxicity provisions. The Pajaro River discharge is intended to supplement land disposal activities at projected future wastewater flows during extreme wet seasons. The discharge will occur through an outfall identified as Discharge No. 001, located on the Pajaro River at Highway 25.
- Secondary effluent/land disposal limits were added to the proposed Order for salts to implement Basin Plan water quality objectives and protect beneficial uses of groundwater.
- Salt management program requirements were added to evaluate and reduce salt loading to the groundwater basin.
- Inflow and infiltration program requirements were added to reduce, as much as feasibly possible, flow increases resulting from inflow (i.e., direct connections to the sewer system) and infiltration (i.e., storm water flows seeping through pipe connections, etc.)
- Spill prevention program requirements were added to reduce spills from the collection system resulting from inadequate maintenance or line capacity.
- Removal of annual wastewater performance and capacity engineering evaluation/reporting requirement (operations plan and hydrologic balance.) This was originally required to address concerns regarding uncertainties in the operation and capacity of the disposal system. Review of past reports indicates the Discharger is adequately managing its existing land disposal system and has sufficient excess capacity to safely handle existing flows.

The proposed order contains prohibitions, pretreatment specifications, and discharge specifications for the secondary effluent land discharge and tertiary effluent surface water discharge. Discharge specifications, effluent limits and receiving water limitations are proposed to protect the beneficial uses of the underlying Llagas groundwater sub-basin, Llagas Creek, and the Pajaro River. Finally, Order format was modified to reflect the current format recommended by the Regional Board.

Changes to Monitoring and Reporting Program

Monitoring and reporting related to secondary effluent treatment and disposal has been streamlined and additional monitoring and reporting for tertiary effluent treatment and disposal has been added. Other major changes to the monitoring and reporting program are as follows:

- Climatic monitoring and advance notice for biosolids disposal and solid waste disposal monitoring has been eliminated. This conforms to requirements imposed on most other dischargers.
- The MBAS analysis has been eliminated from the monitoring schedule because the Facitity has not had a history of detection and the analysis generates chloroform, which must be handled as a hazardous waste.
- Monitoring solely for copper has been eliminated from the monitoring schedule because the Facility has not had a recent history of detection and the pretreatment program has properly regulated sources of influent metals. However quarterly copper monitoring still occurs as part of the monitoring for "general minerals" and "irrigation suitability."
- The proposed secondary effluent land disposal area monitoring no longer requires the discharger to check land disposal pond levels daily and calculate depth to groundwater. These measures were previously necessary because of uncertainties in the Discharger's management of wastewater disposal. Wastewater management has improved markedly. Therefore the proposed order only requires the discharger to keep a minimum of two feet of freeboard in the land disposal ponds. This conforms to requirements imposed on most other dischargers that use percolation ponds.
- Water supply monitoring has been eliminated. Water supply monitoring has been used as a baseline to determine the quantity of mineral constituents added by water users. The Discharger will be able to utilize more infrequent water supply data as needed to evaluate salt loading due to domestic supply and use.
- Annual biosolids monitoring and reporting has been added to characterize biosolids and document disposal fate.
- The proposed Monitoring and Reporting Program includes revised surface water monitoring locations to better assess potential non-wastewater related impacts to Llagas Creek. To separate these inputs to Llagas Creek from potential impacts caused by wastewater disposal, the Discharger previously proposed modified surface water monitoring locations in 2001. Specifically, the Discharger proposed discontinuing station SW-5 and adding SW-5A at the outlet of Miller's Slough. SW-3, which is on the same drainage as SW-4, is proposed for discontinuance, along with SW-6, which is historically dry. SW-3A would be added to the agricultural drainage ditch east of the Shriner Ponds, and SW-6A would monitor the city storm drain near the Southside Drive bridge. SW-10 would be added on the north side of the bridge at Bloomfield Road (see Attachment E).

COMMENTS

This staff report and proposed Order were distributed to interested parties (see Attached interested parties list) for comment on July 13, 2004.

RECOMMENDATION

Adopt Waste Discharger Requirements Order No. R3-2004-0099 as proposed.

ATTACHMENTS

1. Proposed Waste Discharger Requirements Order No. R3-2004-0099
2. Monitoring and Reporting Program No. R3-2004-0099
3. Standard Provisions & Reporting Requirements for National Pollutant Discharge Elimination System Permits, January, 1985
4. Copy of Interested Parties List

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